system is assumed to have identical cost and demand conditions. Line *A* lies above the MSO's total revenue share that is at risk, as indicated by the dotted line *B*, because the fixed capacity cost of each system, *Z*, is independent of *n*.[5]

For the network producer/distributor, the fraction of total revenue share at risk simply increases in direct proportion to the fraction of the national market controlled by the MSO, x/M, as indicated by the dotted line, *D*, until they reach 100%. The proportion of network profits at risk is equal to profits from the x controlled markets divided by profits from the network in all M markets. As indicated by the solid line *C*, this direction slopes upward steeply due to the assumption of pure economies of scale in distribution.

Without a more complete, game theoretic model of the bargaining process in this industry, one can obviously not determine what the particular relationship of these risk functions is to actual bargaining power, or much less to equilibrium input price points. This simple model does suggest that as long as cable system profits at risk are sufficiently high (*i.e.*, as long as networks are sufficiently differentiated), bargaining power tends to be in the hands of a network when negotiating with a sufficiently small MSO, but that this balance shifts in favor of the MSO as its market share increases. As MSO size increases, then, we would expect the input price point to move closer to the network's reservation price.[6] Due to increasing returns to scale in distribution, this reservation price is necessarily *below* the network's average total cost with respect to that market.[5]

5. Note that if the MSO realizes economies of scale in system ownership, c would not be constant (as we have assumed for simplicity), so Line A would slightly rise as MSO size increased because MSO profit margins per subscriber would be greater for larger total subscriber bases.

6. An analogy could be made with the position of a retail store in a large city. Any one individual has "monopsony" buying power with respect to his or her own decision to purchase a product at the store. Clearly, the retailer's strategy will be to retain the role of price maker, ignoring the negligible effect of any one consumer's actions on its revenues. On the other hand, a consumer's union of sufficient size is likely to be able to challenge the retailer's price making strategy.

In summary, the assumptions of economies of scale in networking, free entry in networking, and local monopsony in cable markets imply that the network's reservation input price per subscriber is below its average total cost per subscriber. The bargaining model, on the other hand, suggests that while networks may remain price makers with respect to small MSOs or individual systems, there may be relatively high marginal returns to an MSO from a strategy of accumulating national market share in order to force equilibrium input price down toward the network's reservation level.

Two other features of this model are of interest: First, as the MSO gets larger, its perceived supply curve as illustrated in Figure 2(a) becomes flatter, effectively increasing the minimum reservation price of the network. That is, if an MSO becomes very large, or if there is collusion among enough MSOs, the problem of myopic behavior tends to disappear. This suggests both an incentive for tacit collusion among large MSOs, and an incentive to acquire systems, in order to move toward an industry profit maximizing equilibrium.

Another interesting feature of the model is that if an MSO succeeds in forcing input price below the network's average cost, it has an incentive to vertically integrate with the network. In bargaining with unaffiliated networks, that is, the MSO does not consider the negative externality of its input pricing strategy on program supply in other markets (which in this model is represented by the increased risk that any one network will go out of business). By integrating, the network-MSO combination can thus create higher joint profits by internalizing that negative externality.

Our assumption that cable networks, or equivalently cable program producers, have no alternative ways to reach local consumers must be qualified. Multi-point distribution systems (MDS), and Satellite Master Antenna Systems (SMATV) offer direct alternatives for more popular networks in some markets. Many individual

cable programs can also be sold to broadcast stations, and at least in the case of movies, can be released intertemporally to theaters or on videocassettes. A large percentage of cable programs, however, clearly have no alternative distribution routes, and those which do are often handicapped by the odd geographic patterns of cable franchise areas. Realistic distribution alternatives for most programs require national release and promotion plans, or at least market-wide distribution within local television markets. If one or a few of the 20 or 30 cable systems usually contained in a local TV market do not carry a program, its distributor's alternatives remain very limited.

The assumption of pure economies of scale in wholesale network distribution is also exaggerated. Although marginal physical costs of satellite distribution are literally zero, there are marginal costs of serving accounts. Also, cable networks often have contractual obligations to compensate their suppliers on a per final subscriber basis. Substantial percentages of cable programs are originally produced or financed by cable networks, however. Furthermore, while per final sale agreements with producers may assist the network's negotiating position in practice, such contractual arrangements simply insert a middleman into the same fundamental problem, and thus should not fundamentally affect the bargaining process.

IV. SUMMARY AND CONCLUSIONS

In Section II, we showed that national concentration of MSOs has substantially increased since 1977, but that it remains below the level which Justice Dept. standards ordinarily establish as worthy of concern. In Section III, we offered a model suggesting that the advantages to MSOs of accumulating national market share in order to gain power over input price may be high. The point where this concentration becomes excessive is, of course, an empirical question. One suggestion

of the model, however, is that this point has no particular relationship to standard interpretations of horizontal concentration indices, and that much lower concentration levels *could* have substantial anticompetitive effects.

A. Welfare effects

If MSOs do accumulate excessive monopsony power, the negative effects on economic welfare are evident from the model. Monopsonistic reduction of input prices in some markets will reduce the number (or quality) of differentiated media products that are available to consumers in all other markets.

With respect to First Amendment concerns, upstream economies of scale also imply that a "veto power" over network market entry can be exerted by a large MSO or a collusive group of MSOs. On the one hand, it is important to recognize that at least as long as the MSO is not vertically integrated with any incumbent network, it could never be in the MSOs economic interest to choose anything other than an optimal menu of networks with respect to its subscribers' interests.

It is possible that vertical integration of large MSOs with networks may worsen the situation, at least with respect to First Amendment considerations. In two econometric studies, Weiss, Valente and I (1988, 1989) show that MSOs integrated with pay cable networks tend to favor their affiliated networks at the expense of rival networks. While this "favoritism" may be explained by the increased efficiency which an MSO realizes from transacting with a corporate affiliate, barriers to network entry are apparently increased as a result.

B. Empirical discussion

The possibility that relatively large MSOs gain substantial power over input price is consistent, at least, with some available anecdotal information. The NTIA (1988) cites several examples of extreme per subscriber fee discounts which larger MSOs reportedly pay to cable networks, such as $.02 per subscriber per month for CNN for MSOs with over 5 million subscribers compared to $.29 for MSOs with under

500,000 subscribers, or $.90 per subscriber for HBO paid by the largest MSO, TCI, Inc., compared to $5.00 paid by "small" MSOs. In qualification, of course, transactions economies (as the NTIA points out) are surely one factor, or these examples may be incomplete descriptions of more complex pricing structures. The model provides an alternative rationale, however, for these and for other input price discounting schemes based on MSO size which appear to typify the cable industry.

The model also suggests a possible rationale for the strategy which at least one MSO, TCI, has pursued in accumulating majority as well as minority ownership interests in several other MSOs. According to the 1988 10-k annual report of United Artists Cable Communications, Inc. (majority owned by TCI), a subsidiary of TCI called Satellite Services, Inc. (SSI) had the stated purpose of negotiating on behalf of "affiliates of TCI" (apparently consisting of TCI's consolidated and unconsolidated MSO interests) with program suppliers in wholesale rate negotiations (p. I-5). The model is further consistent with the relatively extensive vertical integration of TCI with cable networks. As of 1988, TCI had ownership interests ranging from 14% to 60% in eight basic networks (Telecommunication, Inc. 1988 Annual Report).[7]

Again, there are clearly other explanations for these observations which are consistent with efficiency producing behavior. They invite, however, more complete analysis of the question whether current levels of MSO concentration are excessive. Ideally, one would directly test the relationship of MSO size to input price levels, although the difficulty of distinguishing efficiency from market power effects would remain problematical. In our own effort to better understand the costs and benefits to consumers of jointly owned cable systems, overall, we are conducting an econometric study to determine how a system's retail prices and levels of service to subscribers

7. More generally, the practice of spreading relatively small amounts of ownership equity in cable networks among the largest MSOs became common in the late 1980's. One apparent reason for this was to ease entry of new networks. Consistent with the model, however, it is also possible that this practice serves to faciliate industry cooperation in limiting opportunistic input pricing behavior by large MSOs.

may depend on the size of the MSO (or group of MSOs having ownership ties), to which that system belongs.

In advance of further evidence, we offer one policy recommendation: That consortia among MSOs for the purpose of negotiating with program suppliers be prohibited (unless national market shares of their members aggregate to some relatively low ceiling amount). While transactions savings may be involved, the primary purpose of any relatively large consortium would seem to be facilitation of MSO collusion in input price negotiations.

C. Speculative application to other media chains

Movie theaters, broadcast TV stations, and newspapers are with rare exceptions localized businesses which rely to some degree on nationally distributed inputs which are subject to evident economies of scale in upstream distribution. The basic theoretical conditions underlying our results thus apply. In all three cases, however, national market concentration appears to be lower than in cable, and most important, product distributors appear to have better alternatives for reaching consumers within local markets. Local market control is critical since it is not otherwise possible to increase power over input price by accumulating national market share.

Broadcast television stations seem to warrant little concern, primarily because of their consistently low shares in larger television markets. In fact, the Network Inquiry Special Staff (1980, v. 2, p. 270-3, 275-82) reported that chain owned stations actually paid higher prices for syndicated programs than independently owned stations. More generally, Besen and Johnson's (1984) survey and analysis of television station group ownership reports little evidence from a number of empirical studies that group ownership significantly affects consumer welfare positively or negatively.

In the daily newspaper case, local market shares are generally high. A mitigating factor, however, may be the use of cooperatives, *i.e.*, Associated Press, for determining wholesale prices of editorial materials. In particular, a cooperative may be able to constrain opportunistic efforts to reduce input prices by relatively large chains. On an empirical level, the findings of Dertouzos and Thorpe (1982) suggest in any case that newspaper chains also do not realize any substantial cost benefits from large size.

In theatrical movie exhibition, recent acquisition activity by the largest chains has been quite aggressive, but a lack of readily available evidence on shares within individual markets make these trends difficult to evaluate. On the one hand, alternative outlets for intertemporal release of theatrical features, such as videocassettes and pay cable networks, have increased distributor options in recent years. Historical evidence that theater chains are strongly inclined to attempt domination of lucrative local markets, however, suggests a greater likelihood that accumulation of monopsony power is a significant motive for chain expansion, and thus worthy of investigation.

This brief survey of chain ownership within these three other industries offers no specific indications that monopsony power plays a substantial role in them. Our results do emphasize, however, the importance of preserving local market competition in these industries.

In conclusion, much work remains to be done to understand horizontal and vertical relationships in cable and other media industries. We mention in particular theoretical and empirical research into the bargaining process by which input prices are set in these industries. This paper offers a general analytical framework, particular to the nature of media products, which can serve as a basis for this research.

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Appendix A

Concentration Trends: Cable Television MSO's (1977-1989)

	1977			1982	
Rank Firm	Subscribers (thousands)	National Share (%)	Rank Firm	Subscribers (thousands)	National Share (%)
1. Tele Prompter Corp. [a]	1,068	8.5%	1. ATC	5,978	8.5%
2. Telecommunications Inc. (TCI)	837	6.6	2. TCI [c]	3,900	8.3
3. American TV & Communications (ATC)	625	5.0	3. Group W (Westinghouse)	2,302	7.2
4. Warner Communications	550	4.4	4. Cox Cable Communications	1,517	5.0
5. Viacom International	482	3.8	5. Warner Communications	1,489	4.8
6. Cox Cable	455	3.6	6. Storer Cable Communications	1,465	4.6
7. Sammons Communications [b]	291	2.3	7. Times Mirror Cable TV	1,410	3.0
8. Communication Properties	279	2.2	8. Newhouse Broadcasting	1,252	2.6
9. UA-Columbia Cablevision	218	1.7	9. Continental Cablevision	1,140	2.5
10. United Cable TV Corporation	195	1.5	10. Viacom	1,124	2.4
11. Continental Cablevision	182	1.4	11. Rogers/United Artists	1,115	2.3
12. Storer Cable	181	1.4	12 United Cable TV	1,091	2.1
13. Cable Com-General, Inc.	180	1.4	13. Sammons Communications	992	2.0
14. Midwest Video Corp.	158	1.3	14. Telecable Corporation	854	1.4
15. Telecable Corp.	154	1.2	15. Capital Cities Communications	774	1.2
16. Service Electric Cable	151	1.2	16. General Electri Cable vision	693	1.2
17. Newhouse Broadcasting	140	1.1	17. Cablevision Systems	682	1.1
18. General Electric Cablevision	140	1.1	18. Comcast Corporation	678	1.1
19. Liberty Communications, Inc.	133	1.0	19. Daniels & Associates	630	1.1
			20. Heritage Communications	601	1.1
			21. Jones Intercable	560	1.0
			22. Wometco	558	1.0
			23. Liberty Communications	530	1.0
Total					
Total Basic Cable Subs.	12,600	100.0%		26,518	100.0%
Four-Firm Concentration Ratio		24.5			29.0
Herfendahl Index		216.71			316.33

Sources:
For 1977 Totals: Compilations from ***Television and Cable Factbook*** (Services Volume), No 47. Television Digest Inc., 1978, p. 427-a.
For 1977 Firms: ***Television and Cable Factbook*** at pp. 955-a to 993-a.
For 1982 Totals: ***Television and Cable Factbook*** (Services Volume), No 51. Television Digest Inc., 1982, pp. 1548-49.
For 1982 Firms: ***Television and Cable Factbook*** at pp 1500-1541.

Appendix A continued

Concentration Trends: Cable Television MSO's (1977-1989)

	1987			1989	
Rank	Firm	Subscribers (thousands)	National Share (%)	Firm	Subscribers (thousands)	National Share (%)
1.	Telecommunications Inc. (TCI) [d]	5,163	12.4%	Telecommunications Inc. (TCI) [f]	7,771	16.0%
2.	American TV & Communications (ATC)[e]	3,700	8.9	Time-Warner[g]	5,386	11.1
3.	Continental Cable-Vision	1,550	3.7	Continental Cablevision	2,595	5.3
4.	Storer Cable Communications	1,442	3.5	Comcast Corporation[h]	2,372	4.9
5.	Cox Cable Communications	1,429	3.4	Jones Spacelink	2,363	4.8
6.	Warner Communications	1,424	3.4	Cox Cable Communications	4,562	3.2
7.	Comcast Cable Communications	1,303	3.1	Storer Cable Communications	1,550	3.2
8.	United Cable TV	1,134	2.7	Cablevision Systems	1,474	3.0
9.	Newhouse Broadcasting	1,041	2.5	Newhouse Broadcasting	1,211	2.5
10.	Cablevision Systems	1,035	2.5	Times Mirror Cable TV	1,096	2.3
11.	Viacom	1,020	2.5	Cablevision Industries	1,044	2.1
12	Jones Spacelink	989	2.4	Viacom	1,018	2.1
13.	Times Mirror Inc.	932	2.2	Adelphia Communications	982	2.0
14.	Sammons Communication	830	2.0	Sammons Communications	886	1.8
15.	Century Cable	691	1.7	Century Cable	876	1.8
16.	Paragon Cable	648	1.6	Falcon Cable (including Capital)	822	1.7
17.	Cablevision Industries	593	1.4	Paragon Cable	765	1.6
18.	Adelphia Communication	573	1.4	Telecable Corp. (including Lexington)	665	1.4
19.	Centel Communications	510	1.2	Scripps-Howard	560	1.2
20.	Telecable Corporation	509	1.2	KBL Cable Inc.[i]	527	1.1
21.	Rogers Cablesystems	501	1.2	Muiltivision Cable	510	1.1
22.	Falcon Cable TV	476	1.1	Prime Cable	504	1.0
23.	Scripps-Howard	475	1.1	Tele-Media Corp.	490	1.0
24.	Daniels & Associates	473	1.1			
25.	Cooke Cablevision	454	1.0			
	Total					
	Total Basic Cable Subs.	41,491	100%		48,613	100%
	Four-Firm Concentration Ratio		28.5			37.3
	Herfendahl Index		350.6			527.94

Sources:
For 1987 Totals: Compilations from ***Television and Cable Factbook*** (Services Volume), No 56. Television Digest Inc., 1988, p. C364.
For 1987 Firms: ***Television and Cable Factbook.***, pp. B-1301 to B-1333.
For 1989 Total: ***Television and Cable Factbook*** (Services Volume), No 58. Television Digest Inc., 1990, p. C-392.
For 1989 Firms: ***Television and Cable Factbook*** (Television and Cable Volume), at pp. A-1609 to A-1704.

Appendix A continued

Concentration Trends: Cable Television MSO's (1977-1989)

Notes:

All data from the ***Television and Cable Factbook*** are published in April of the year following that indicated on each table. Dates of basic subscriber counts are published for each MSO and generally range from October of the indicated year to April of the following year. Base data are Arbitron totals between January 1 to April 1 of the following year as available. Market shares are therefore approximate.

All subscribership data exclude unconsolidated holdings, as indicated in the ***Factbook***, except the total for TCI in 1982 for which we could not separate out unconsolidated holdings. The TCI share for 1982 is therefore slightly overstated. The source for most of the following information was the ***Television and Cable Factbook***, and 10-K reports in some cases.

(a) Not including unconsolidated interest in Theta Cable (80,743 subscribers)

(b) Not including undisclosed interest in Comcast Corp. (72,388 subscribers)

(c) Includes 50% interest or less in Tennessee-Kentucky Cable TV (50%), Telescripps Cable Co. (50%), TCI-Taft Cablevision Assoc. (undisclosed), TKR Video Inc. (undisclosed),

(d) TCI total does not include systems in which TCI had an interest of 50% or less. These systems included Brenan Communications (50%) 113,538; Columbia International (20%) 117,000; Eagle Cable (undisclosed %) 9,200; Kansas City Cable Partners (50%) 134,545; Lenfest Communications (48%) 252,198; Metro Cable Corp. (Undisclosed %) 9,067; S/D Cable Partners (principal partner) 13,956; Sioux Falls Cable TV (50%) 22,689; Taft Cable Partners (principal) 194,843; TKR Cable (principal) 227,481; United Cable TV (23.2%) 1,134,336; Upper Valley Telecable (principal) 19,070; Village Cable (principal) 1,53; Western Communicaty TV (37%) 431; and West Marc Communications (50%) 267,220, for a total additional interest in 1,517,017 subscribers. If these interests were included in TCI's subscriber count above, it would be 7,680,000 subscribers or a national share of 18.5%.

(e) The ATC total does not include systems in which ATC had an interest of 50% or less. These systems included Kansas City Cable Partners (50%) 134,545; and Paragon Communications (50%) 648,000, for a total additional interest in 782,545 subscribers. If this interest were included in ATC's subscriber count above, it would be 4,482,000 subscribers, or a national share of 10.8%.

(f) The TCI total does not include systems in which TCI had an interest of 50% or less. These systems included American Televenture Inc. (46%) 4,476; Bresnan Communications (50%) 133,921; Cencom Cable Associates (undisclosed %) 425,000; Columbia International (20%) 191,000; Cross Country Cable of Puerto Rico (undisclosed %) 28,000; Kansas City Cable Partners (50%) 160,100; Lenfest Communications (48%) 457,886; SID Cable Partners (principal partner) 14,500; Sioux Falls Cable TV (50%) 29,6790; Storer Cable Communications (42.5%) 1,550,000; TKR Cable (principal partner) 294,861; Upper Valley Telecable (principal partner)22,000; Village Cable (principal partner) 2,046; Western Community TV (37%) 489; and some Cooke Cablevision systems (undisclosed %) 200,000 for a total additional interest in 3,513,969 subscribers. If this interest were included in TCI's subscriber count above, it would be 11,284,969 subscribers or a national share of 23.2%.

(g) Not including 50% interest in Paragon Communication or Kansas City Cable Partners. If these interests were included in ATC's subscriber count above, ATC would have a share of 12.8%.

(h) Not including part ownership with TCI of Storer Cable

(i) Not including 50% interest in Paragon Cable.

LOCAL MONOPSONY AND "FREE RIDERS" IN INFORMATION INDUSTRIES

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March, 1992

Running Head: Local Monopsony

Preliminary draft: not for quotation or reference

LOCAL MONOPSONY AND "FREE RIDERS" IN INFORMATION INDUSTRIES

ABSTRACT

I model the development of market structure in industries (notably information industries such as cable television) which are characterized by upstream economies of scale in the distribution of differentiated products to retail establishments in local market areas. By representing the input price setting process as a bargaining game, I show that incentives for retailers to form coalitions within and/or across local markets in order to accumulate monopsony power tend to be relatively high in such industries. Myopic input price setting by separate retailer coalitions with monopsony power may reduce product variety below industry profit maximizing levels, however, suggesting that vertical integration and cartels or other forms of industry-wide cooperative behavior are means to control the level of product variety.

I. INTRODUCTION

Accompanying recent growth of the cable television industry has been marked change in its market structure. From 1979 to 1990, the national market shares (including unconsolidated operations) of the four largest multiple cable television system operators (MSOs) increased from 24.9% to 46.9% of U.S. basic cable subscribers (Federal Communications Commission, 1990, Appendix G, p. 3). Mostly over this same time period, vertical ownership relationships between MSOs and cable networks have become relatively prevalent. Of 53 networks which Klein (1989) identified, 36 had ownership affiliations with at least one MSO; fifteen networks were jointly owned by more than one MSO, and the ownership shares of nine networks were spread among ten or more different MSOs. An interesting feature of vertical relationships in cable is that several networks entering the industry in the 1980's have distributed equity shares to major MSOs in return for agreements to offer the network to subscribers.

These developments have recently attracted popular and legislative attention, mostly it seems, because of concerns that larger, integrated MSOs might exert excessive control over entry into the program supply market (Wall Street Journal, January 27, 1992, p. A1-5; U. S. Congress, 1989, 1990). Particular attention in this respect has been focussed on the largest MSO, Telecommunications, Inc. (TCI).[1] In 1989, TCI-controlled systems (including unconsolidated ownership shares in eight other MSOs) accounted for 23.2% of basic cable subscribers. As of early 1992, TCI had acquired ownership shares in 13 different cable networks.

My primary aim is to improve our understanding of the motives and effects of structural development in cable television and in some other consumer information industries, such as theatrical motion pictures and newspapers. These industries are characterized by conditions of upstream economies of scale in the distribution of differentiated products to retail establishments in local market areas. I develop a

theoretical model which shows that incentives for retail level firms to accumulate monopsony power are relatively strong in such industries, essentially because of a "free rider" problem arising from the scale economies upstream. The model further suggests that vertical integration and cartels or other forms of industry-wide cooperative behavior are viable means to limit detrimental effects which the exercise of monopsony power may have on aggregate industry profits.

Market structure in consumer information industries, notably the mass media, has attracted much policy attention. The recent Congressional Hearings on the cable industry raised the issue of limiting the national market shares of MSOs and of restricting vertical ownership ties between MSOs and cable networks. A number of antitrust actions have constrained or sought to constrain vertical ownership, horizontal concentration, and collusive or "cooperative" behavior in the theatrical motion picture and newspaper industries (Conant, 1960; Nelson and Teeter, 1986). Federal Communications Commission regulations have greatly proscribed horizontal and vertical relationships in radio and television broadcasting (Besen, et al, 1984). While these issues warrant detailed empirical analysis which I do not attempt here, I hope to shed general light on them.

The general significance of monopsony power has been recognized in previous economic analysis of some information industries. Conant (1960) generally attributed antitrust troubles of the theatrical motion picture industry, before it was restructured by *U.S. v. Paramount Pictures, Inc.* (334 U.S. 1, 1948), to monopsony control that was exerted by five vertically integrated theater chains. In an earlier paper (1982), I consider the role of local monopsony in the historical development of the motion picture industry. In a related paper, Schmanske (1986) attributed market success of the Associated Press news cooperative to its solution of a "public good" problem arising from upstream economies of scale in distributing news products, but he did not explicitly consider a role for monopsony power.

A second aim of this paper is to address a more general theoretical issue: When can downstream firms, such as retailers, which have local monopoly power over consumers also exert monopsony power with their suppliers? Bork (1978), in discussing an antitrust case (*Standard Fashion Co. v. Magrane-Houston Co.*), presumed that input price bargaining power would be in the hands of local firms as long as their competitive suppliers have no other viable outlets in that market (p. 307). Matthewson and Winter (1986), however, referring to Bork's claim, describe this logic as "intuitive, popular, and wrong" (p. 1058). They state, however, that a theoretical exploration for their view remains an open issue.

Most authors seem to have accepted the general notion that a monopoly retailer with a relatively small fraction of the national market would have limited monopsony power compared to that which a large retail chain could exercise. This notion appears to underlie, for example, the early "countervailing power" hypothesis of Galbraith (1952). It is not obvious, however, how a retailer would be able to "compound" monopsony power held in more that one separate market, or if so, what its effects might be on final market outcomes.[2]

A Brief Summary

I explicitly focus on input price setting as a bargaining game. Upstream or downstream firms form horizontal coalitions in order to increase their bargaining power, thereby affecting input prices, and as a result, final prices and product variety.

The general industry structure I model is one in which upstream suppliers manufacture differentiated products under increasing returns to scale; these products are then distributed to local retailers, which in turn market the products to consumers. These conditions represent essential features of cable television and other information industries. For example, a cable network is inherently differentiated and has evident technological economies of scale in distribution. That is, the network incurs a fixed cost in the creation of its programming, but this programming can be provided to additional

local systems almost literally by the flip of a switch at the system level. Similarly, newspaper editorials, movies, and other information products typically involve a relatively high "first copy" cost of production, but they can be duplicated and distributed to local newspaper publishers or movie theaters at relatively low, even negligible marginal costs (Owen, 1975).

In the initial version of the model, monopolistically competitive suppliers each offer a single differentiated product to monopolistically competitive retailers within each local market. The upstream firms produce with a fixed setup cost and constant (zero) marginal costs of distribution. Given free entry upstream and downstream, the straightforward result of a multi-lateral input price bargaining process between suppliers and retailers is a determinant vector of input price payments.[3]

I next consider the effects of forming horizontal coalitions among retailers within local market areas, among different local monopoly retailer coalitions (labelled "chain coalitions"), and among suppliers upstream. In itself, a monopoly coalition of retailers within a local market area (assuming that entry is also constrained) fundamentally changes the bargaining game: If bargaining fails, the upstream supplier loses potential revenues equal to the proportion of the national market which that local market accounts for; the downstream coalition risks losing the increment to aggregate retail revenues which the marginal product(s) controlled by that supplier potentially contribute in that market.

To analyze the effects of coalitions, I specify a simple bargaining model. First I establish the end points of the relevant input price contract curve. One end of the curve is represented by the solution of a "price taker" comparative statics model in which the chain coalition charges monopoly retail prices in the local markets it controls, but turns over all revenues in excess of its costs to suppliers. The other end of the curve is represented by a "price maker" solution in which the retail chain coalition behaves as a pure monopolist/monopsonist, extracting the reservation prices of upstream suppliers. I

then assume that relative bargaining power, and thus the point along this contract curve where a bargain is struck, depends on the proportion of the national market which a downstream coalition controls, compared to the proportion of the supply of all differentiated products that is controlled by the representative upstream coalition.

The model has some novel features. First, if a given retailer coalition were a pure monopsonist, *i.e.*, price maker, it would be able to force input price of the upstream coalition to the supplier's marginal (here zero) cost of distribution in that monopsonist's controlled market(s). Such a strategy, however, would cause a reduction in available product variety due to the exit of upstream suppliers, which would in turn reduce potential revenues of the retailer coalition. I show that optimal input price for the coalition (*i.e.*, the lower end of the input price contract curve), is thus above zero. Because the negative effects on product variety which would result from price making behavior by a retailer coalition are proportional to its national market share, the retailer's optimal input price also increases with its share of the national market. Also affecting the equilibrium input price level, however, is the fact that the monopsonist's bargaining power, and therefore its ability to practice price making behavior in the first place, increases with its share of the national market as well. A main point of the model is that because of economies of scale upstream, the marginal gain to retailers from forming coalitions within and across local markets are greater than in the absence of such economies.

Of course, upstream firms can also combine to confront downstream monopsony power. However, another feature of the model is that if individual chain coalitions are at least partially successful at exerting monopsony power, the cumulative effects of their price making behavior may be to reduce product variety below the industry profit maximizing level. Downstream coalitions, that is, behave myopically, considering only the relatively small effects of their own bargaining behavior on product variety. This circumstance provides an incentive for retailers to vertically integrate with suppliers in

order to internalize the negative externality of myopic chain coalition bargaining behavior. By means of integrating, separate chain coalitions may be able to better coordinate their bargaining behavior in order to maximize aggregate industry profits. Cartels or other cooperative behavior among vertically integrated firms can serve such purposes.

I begin in Section IIA. below by setting out the parameters of a basic one period bargaining model. In this context, I develop a competitive case in Section IIB. In Sections IIC. and IID. respectively, I establish the alternative "price taker" and "price maker" models. I then develop the bargaining game in Section IIE, and conclude in Section III with some descriptive empirical evidence.

II. THE MODEL

A. Basic Assumptions

Consider an industry in which there are M local markets of equal size with symmetric demand conditions, $i = 1.....M$.

There are N differentiated, but equally attractive, products, $j = 1....N$. That is, I assume that these products are always symmetrically distributed in some product space. N is determined as an equilibrium condition of the model and represents product variety.

There are N upstream producer/distributors, one for each product, and N downstream retailers within each local market. Each retailer markets "copies" of one of the differentiated products to consumers. Coalitions among these retail firms are allowed at a later point.

The profit functions for downstream retailers are:

$$\Pi_{ij} = (p_{ij} - c)q_{ij} - Z_{ij} \tag{1}$$

where p is final price, q is the number of buyers per product and c is a constant marginal cost of retail distribution. Z represents a negotiated lump sum to be paid back to suppliers from retail revenues; thus there are no transactions costs and no marginal component to the input price contract. Note also that there are no fixed costs of operation at the retail level.[4]

For upstream suppliers, profits are:

$$\Pi_j = \sum_{i=1}^{M} Z_{ij} - K \tag{2}$$

where K is a fixed cost of producing each product, which is assumed constant for each product. For simplicity, marginal costs of upstream distribution are assumed to be zero. I thus describe upstream suppliers as an industry of monopolistically competitive firms producing differentiated products with fixed setup costs and constant (here zero) marginal costs of distribution.

Demand functions are as follows:

$$q_{ij} = \sum_{-j} [J + (\varepsilon - \alpha) p_{i,-j} - \varepsilon p_{ij}] N^{\beta-1} \tag{3}$$

where $J, a, \varepsilon > 0, \varepsilon > a$, and $0 < \beta < 1$. The subscripts, $-j$, indicate the vector of prices of all other products except j.

From (3), $\partial q_{ij}/\partial p_{ij} < 0$; $\partial q_{ij}/\partial p_{i,-j} > 0$; $\partial q_{ij}/\partial N < 0$; and $\partial^2 q_{ij}/\partial N^2 > 0$. That is, all products are substitutes, and while demand for an individual product thus decreases with an increase in product variety, it does so at a decreasing rate.

I also define an aggregate demand function, Q_i which for the case where all p's are equal in market i, can be written:

$$(4) \qquad Q_i = \sum_{j=1}^{N} q_{ij} = (J - \alpha p_i)\, N^{\beta}$$

The parameter β thus measures the elasticity of aggregate demand with respect to product diversity. Consistent with (3), $\partial Q_i/\partial N < 0$.

B. The Market Process

I now describe a simplified one period input price bargaining process between upstream suppliers and downstream retailers. At the beginning of the period, there is simultaneous negotiation across the nation between producers and retailers for all potentially available products in all local markets. There is no uncertainty about final demand and there is complete information about the reservation prices of all parties. As noted above, (1) and (2) reflect zero bargaining costs. Based on results of the bargaining, upstream firms then decide whether or not to produce, and downstream firms decide which product, if any, to offer to consumers. During the period, retail transactions take place and settlements between producers and retailers are made. The entire process is then repeated in the next period.

Note also that since there is no marginal input price component, double marginalization is not involved in this model. That is, settlements are made in terms of lump sum Z's without *a priori* uncertainty of what final demand will be. However, alternative equlibria can be more usefully compared if we consider the negotiations to actually take place in terms of another variable, r, $0<r<1$, the percentage share of total retail revenues which will accrue to either party after transactions are completed. That is:

$$(5) \qquad r_{ij} = \frac{Z_{ij}}{p_{ij} q_{ij}}$$

I now consider equilibrium outcomes of the bargaining process in the absence of coalitions and with free entry upstream and downstream.

C. Bargaining with No Coalitions

As independent firms, each supplier has $N\text{-}1$ alternative buyers and each retailer $N\text{-}1$ alternative suppliers with which to transact. If N is sufficiently large, the multilateral bargaining process in each market reduces to the equilibrium of an industry with monopolistically competitive firms upstream and downstream. All profits are bid to zero. Thus, the core of the game reduces to a vector of points, r_{ij}, for $j = 1...N$, in each market.

An equivalent comparative statics model can be specified as follows:

Retailers maximize (1) w.r.t the p_{ij}, resulting in :

$$\frac{\partial \Pi_i}{\partial p_{ij}} = (p_{ij} - c)\frac{\partial q_{ij}}{\partial p_{ij}} + q_{ij} = 0 \tag{6}$$

Retailers and suppliers both enter or leave the market until profits are zero, so I set (1) and (2) $= 0$. In combinations with (6) and (5) above, and applying assumptions of symmetry within and across markets, I drop subscripts and obtain:

$$(p - c)\frac{\partial q}{\partial p} + q = 0 \tag{7}$$

$$rpq\,M - K = 0 \tag{8}$$

$$(1 - r)pq - cq = 0 \tag{9}$$

which are three equations in p, r, and N.

Using (3), I obtain:

$$(10) \qquad p^* = \frac{J + \varepsilon c}{\alpha + \varepsilon}$$

$$(11) \qquad r^* = \frac{p^* - c}{p^*}$$

$$(12) \qquad N^* = \left[\frac{(p^* - c)(J - \alpha p^*)}{K} \right]^{\frac{1}{1-\beta}}$$

$$(13) \qquad Q^* M = \left[\frac{p^* - c}{K} \right]^{\frac{\beta}{1-\beta}} (J - \alpha p^*)^{\frac{1}{1-\beta}}$$

Note from (10) that final prices are independent of product variety. Reflecting the condition of zero profits downstream, the equilibrium division of revenues, r^*, is equal to the per-final-sale markup over retailer marginal costs. The equilibrium number of products, N^*, is increasing in β, the elasticity of consumer demand w.r.t. product variety, and decreasing in K, production costs. Total demand for all products in all markets, MQ^*, rises with β.

D. Bargaining with Horizontal Coalitions Permitted

I now allow horizontal coalitions to be formed among upstream or downstream firms, and consider effects on the bargaining equilibrium. For reasons of simplicity and tractability, I consider only certain cases. First, I assume in all cases hence that all of the retailers in each local market are combined into local monopoly coalitions and that no local market entry is possible. Given this assumption, I permit these local monopolists to combine across local markets into "chain coalitions," and I permit suppliers to form coalitions upstream. However, while downstream chain coalitions may